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(71) Applicant *(for all designated States except US)*: AB ALL-ROLL [SE/SE]; P.O. Box 20019, S-200 74 Malmö 20 (SE).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)* : HANSSON, Bill, Johnny [SE/SE]; Vikingagatan 39 B, S-216 19 Malmö (SE).

(74) Agents: STRÖM, Tore et al.; Ström & Gulliksson AB, Rundelsgatan 14, S-211 36 Malmö (SE).

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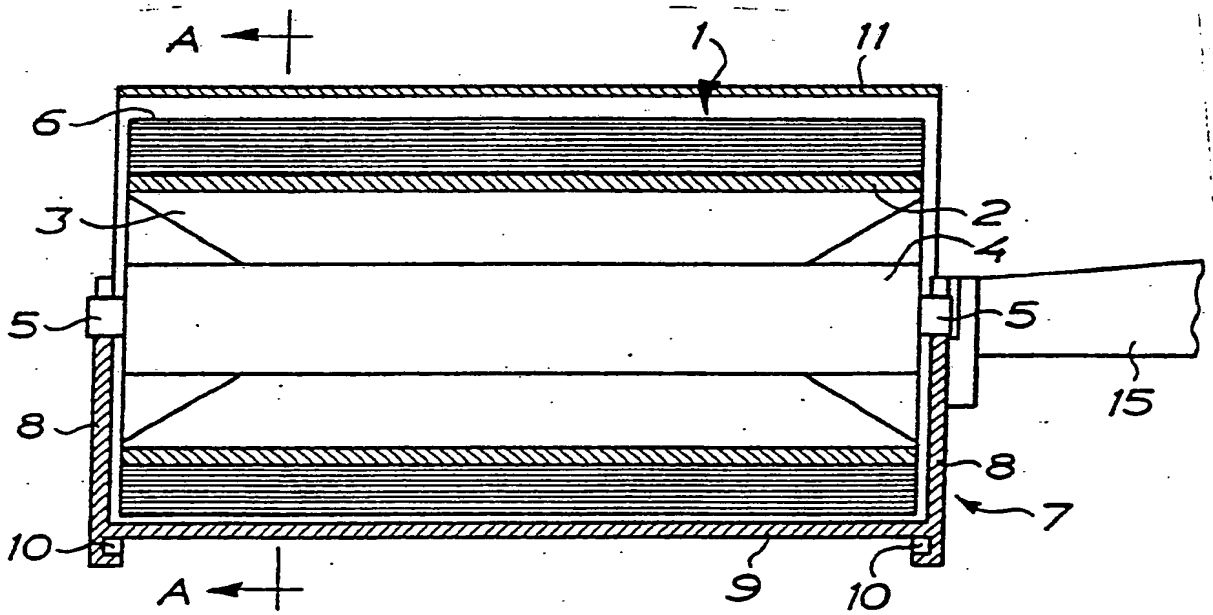
(54) Title: DUST REMOVER FOR REMOVING DUST, HAIR OR OTHER LOOSE PARTICLES FROM OBJECTS SUCH AS CLOTHES, TEXTILES, FURNITURE ETC



(57) Abstract

Dust remover for removing dust, hair or other loose particles from the surface of objects such as clothes, textiles, furniture etc comprising a substantially cylindrical roller (1) which is rotatably supported on a holder, the peripheral surface of said roller being provided with an adhesive layer (6) for removing said dust particles etc by adhesion when the roller (1) is brought into rolling contact with the surface of the object to be cleaned. The dust remover comprises a divided casing, the casing parts (7, 11) being movable in relation to each other by relative rotational movement between a position in which the casing parts (7, 11) completely enclose the roller (1), and a position in which the roller (1) is partly exposed for enabling rolling contact with the object to be cleaned. The casing parts (7, 11) are arranged for relative rotational movement about an axis which is parallel to, and preferably coaxial with the rotational axis of the roller (1).

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US	United States of America

DUST REMOVER FOR REMOVING DUST, HAIR OR OTHER LOOSE PARTICLES FROM OBJECTS SUCH AS CLOTHES, TEXTILES, FURNITURE ETC

The present invention relates to a dust remover for removing dust, hair or other loose particles from the surface of objects such as clothes, textiles, furniture etc, comprising a substantially cylindrical roller which is rotatably supported on a holder, the peripheral surface of said roller being provided with an adhesive layer for removing said dust particles etc by adhesion when the roller is brought into rolling contact with the surface of the object to be cleaned.

Dust removers of the kind mentioned are previously known and referred to on the market as "clothe-care rollers, dust rollers" etc. Such dust removers which provide an efficient means for its intended purpose, include a substantially cylindrical roller mounted on a holder, said roller having wound thereon in a number of layers a strip of paper which on its outwardly facing surface is coated with a non-drying, highly adhesive substance. When brought into rolling contact with an object to be cleaned, e.g. an article of clothing, dust particles, hair etc on the surface of the object will get stuck on the adhesive layer of the roller, thus providing a most efficient cleaning of the object. When not in use, the adhesive surface must be protected in order not to become saturated with dust particles and also to avoid unintentional adhesion to objects in the vicinity of the roller. In the most common dust removers of this kind available on the market, this usually is achieved by wrapping a protective glossy piece of paper or film around the roller surface or by passing

a protective tubular cover over the roller from the end thereof. A disadvantage in using a glossy piece of paper to protect the adhesive layer of the roller is that said piece of covering paper must be removed from the roller before using it for cleaning purpose, and must be stored and then rewrapped around the roller when the used part of the adhesive paper has been torn away. When removing the protective paper it runs a risk of being damaged, as is also the case during storage, particularly if it is stored in a pocket or the like. Even if the use of a separate, tubular protective cover to be passed over the roller involves a more simple procedure, a remaining disadvantage is that during the use of the roller for cleaning purpose the tubular cover must be stored in a suitable way and be reintroduced on the roller when the cleaning operation has been finished and the used adhesive paper strip has been torn off. Still another disadvantage of the tubular cover that it must be passed over the roller from one end thereof, which means that it cannot be used for such dust removers wherein the roller is mounted between the legs of a fork-like holder. A further disadvantage is that it easily adheres to the roller surface, which makes it more difficult or even impossible to remove the cover when the roller shall be used.

According to another previously known type of dust removers the cylindrical dust roller is enclosed within a protective casing comprising one tray-like part having two end walls in which the roller is rotatably supported and a cover divided into two separate pieces, each one being swingably connected to the tray-like member by means of a pair of links, for swinging said cover pieces in opposite directions in the longitudinal direction of the roller between a

position above the tray-like member, thereby enclosing said roller, and a position underneath the tray--like member, protruding perpendicularly therefrom thereby forming a handle for holding the dust remover during use thereof.

According to another known dust remover of a similar type, the cover is made in one piece having a tray-like configuration, one end of said cover being swingably connected to the tray-like member supporting said roller, for swinging movement between a position in which the two tray-like members together form an enclosure for the roller, and a position in which the cover is swung 180° longitudinally with respect to the roller and in this position forming an axially protruding handle.

Being advantageous in that the protective cover for the roller does not have to be removed and stored somewhere during use of the roller for cleaning purpose, the dust removers described above are of a rather complicated design including, in the first case mentioned, a tray-like holder for the roller, two separate cover-pieces, two pairs of links having one end pivotally connected to a cover piece and the opposite end pivotally connected to the holder, and in the second case a tray-like holder for the roller, a tray-like cover, one end of which being pivotally connected to one end of the holder and being provided with means for keeping the cover fixed either in a closed position enclosing the roller or in a fully open position forming a handle. This results in difficulties as well as respect to manufacture and assembly of the dust remover as with respect to the use thereof for its purpose.

One object of the present invention is to provide a dust remover of the kind mentioned initially

and referred to above, which does not involve the disadvantages discussed above although including a cover permanently attached to the holder of the roller, said cover being easily adjustable into a position in which the roller may be brought into contact with an object to be cleaned, and which in simple manner may be brought into a position for protecting the adhesive layer of the roller when the cleaning operation has been finished.

Another object of the invention is to proved a dust remover having a simple design which may be manufactured and assembled without difficulties and which is easy to use.

These and other objects of the invention are achieved by designing a dust remover with the features defined in the appended claims.

The invention will now be described in greater detail with reference to embodiments illustrated on the accompanying drawings, in which

FIG 1 is a longitudinal sectional view through a dust remover according to the invention, illustrating a position in which the adhesive surface of the roller is completely enclosed in a protective casing,

FIG 2 is a similar longitudinal sectional view through the dust remover, illustrating a position in which the cover part of said casing is moved into an open position,

FIG 3 is a section as indicated at A - A in FIG 1,

FIG 4 is a section as indicated at B - B in FIG 2,

FIG 5 illustrates an alternative design of the guiding arrangement for guiding the relative rotational movement between the parts of the pro

tective casing,

FIG 6 is a perspective view of an alternative embodiment of a dust remover according to the invention, the dust remover being shown in open position, ready for use, and

FIG 7 is a perspective view of the dust remover illustrated in FIG 1 shown in a closed position completely enclosing the dust collecting roller.

The dust remover illustrated in the drawings comprises a cylindrical roller 1 consisting of a tubular core 2 which by means of radially extending flanges 3 is connected with a hub 4, each end of which being provided with an axially protruding stub shaft 5. On the peripheral surface of the tubular core 2 are wound a number of layers 6 of a paper strip coated on its outwardly facing surface with a layer of highly adhesive, non-drying glue. The roller 1 thus is provided with an adhesive peripheral outer surface to which dust particles, hair etc adhere when the roller 1 is brought into rolling contact with an object fouled with such particles e.g. clothes, textiles etc.

The roller 1 is supported by a holder comprising a primary casing part 7 in the form of a tray-like, substantially half cylindrical member 9, said casing being provided at its ends with end walls 8. The stub shafts 5 protruding axially from the roller 1 are mounted in grooves or slots provided in said end walls 8, said grooves or slots preferably being designed so that the stub shafts 5 will slide into a locked position within said grooves or slots due to a small pressure force exerted on the roller 1 in the direction towards the bottom of said grooves or slots. The grooves or slots are designed so as to provide a resilient locking function for blocking the

falling out from the casing part 7 when the roller is used. In the embodiment shown in FIG 1 - 4, said end walls protrude in the radial direction beyond the outer surface of the half cylindrical tray-like member 9, the surfaces of said protruding portions of the end walls 8 facing each other being provided with half circular grooves 10 forming guide grooves for a second casing part 11 which may be slidably displaced within said grooves for rotational movement with respect to said primary casing part 7.

The secondary casing part 11 comprises a substantially half cylindrical shell having a width substantially corresponding to the distance between the grooves 10 in said end walls 8, except for a certain clearance. As mentioned, the secondary casing part 11 is displaceable in the guiding arrangement formed by the grooves 10 and may by turning it around the cylindrical shell 9 of the primary casing part 7 be brought into the position shown in FIG 3 enclosing the peripheral surface of the roller, or into the position shown in FIG 4, completely displaced into the grooves 10 enabling a part of the cylindrical, peripheral surface of the roller 1 to be brought into rolling contact with the surface of an object e.g. an articles of clothe, to be cleaned from dust, hair or other loose particles. The peripheral length of the secondary casing part 11 should be long enough for making its edges 12 extend a certain distance into the grooves 10 when said secondary casing part or cover 11 is in the closing position indicated in FIG 3. The peripheral length should also be long enough to allow the edges 12 of the secondary cover 11 to protrude a certain distance from the primary casing part 7 when said secondary casing part or cover 11 is fully displaced into the grooves as indicated in FIG 4.

The longitudinal edges 12 should preferably be sharpened for facilitating tearing off a paper strip which has been clogged with dust particles. Alternatively, it is possible to having the edges of the primary casing part 7 sharpened instead of the edges of the secondary casing part 11, or to sharpen the edges of both casing parts 7 and 11. The primary and secondary casing parts 7, 11 may preferably be locked with respect to each other in the open position shown in FIG 3 and in the closed position shown in FIG 4 by means of locking means of the snap-action type arranged between said casing parts. FIG 5 illustrates an alternative guiding arrangement for the rotational movement between the primary and secondary casing parts 7, 11. In this arrangement the end walls 8 extend in the radial direction only to the inside surface of the half cylindrical shell 9 of the primary casing part 7. Instead said shell 9 protrudes beyond the end walls 8 forming guiding edges 13 cooperating with corresponding guide grooves 14 at the ends of the secondary casing part 11.

The primary casing part 7 is preferably rigidly connected with a handle protruding in the axial direction of the roller as indicated in FIG 1 - 7. According to an embodiment not illustrated in the drawings, the handle may have the form of an U-shaped gable having two parallel protruding branches, the free ends of which being rigidly connected with the end walls 8, the opposite ends of said branches being interconnected by a bar etc from which the handle extends perpendicularly with respect to the roller.

FIG 6 and 7 illustrate a further embodiment according to the present invention. In this embodiments also the secondary casing part 11 has the form of a substantially half cylindrical shell provided

with end walls 8' at the ends thereof. The internal dimensions of the secondary casing part 11 are so much larger than the outside dimensions of the primary casing part 7 that a small gap is formed, thus providing a clearance between the casing part 7 and the casing part 11 enabling relative rotational movement without interference. In the embodiment illustrated in FIGs 6 and 7 the relative rotational movement is not obtained by means of circular guiding grooves as in the embodiments previously described. Instead the secondary casing part 11 is rotatably supported at one side by the stub shaft 5 protruding through end wall 8 of the primary casing part 7, or by the outer surface of an angular collar surrounding said stub shaft 5 on the outside end of wall 8. At the other end the secondary casing part 11 is rotatably supported on the handle 15 protruding axially from the corresponding end of the primary casing part 7. For this purpose the secondary casing part 11 is provided with a partly tubular attachment means acting as a kind of bushing having a C-like cross section with a gap slightly smaller than the outer diameter of the corresponding part of said handle 15, for enabling attachment thereto by pressing it over the handle in the transversal direction thereof, thus providing a rotational support for the secondary casing part 11 on said handle 15. The embodiment according to FIGs 6 and 7 correspond in other respects with the embodiment previously described and will thus not be described in further detail with reference to FIGs 6 and 7. The dust remover illustrated in FIGs 6 and 7 is advantageous from manufacturing point of view, and due to this it represents the preferred embodiment of the invention.

The invention is not limited to the embodiments

described above but may be subject ot variations within the scope of the appended claims.

C L A I M S

1. Dust remover for removing dust, hair or other loose particles from the surface of objects such as clothes, textiles, furniture etc, comprising a substantially cylindrical roller which is rotatably supported on a holder, the peripheral surface of said roller being provided with an adhesive layer for removing said dust particles etc by adhesion when the roller is brought into rolling contact with the surface of an object to be cleaned, said holder comprising a divided casing, the casing parts (7, 11) being arranged for rotational relative movement between a position in which the peripheral surface of the roller is completely enclosed by said casing parts (7, 11), and a position in which part of said cylindrical peripheral surface is exposed for enabling said rolling contact with the object to be cleaned, c h a r a c t e r i z e d in that said casing comprises two casing parts (7, 11) which are movable in relation to each other by relative rotational movement about a common rotational axis which is parallel to and preferably coaxial with the rotational axis of the roller.

2. Dust remover according to claim 1, c h a r a c t e r i z e d in that the primary casing part (7) is shaped in the form of a tray provided with end walls (8), said tray having a partial cylindrical shell (9), said roller (1) being rotatably supported by said end walls (8) with a radial gap between the peripheral surface of the roller and the inner surface of said shell (9), and that the secondary casing part (11) is shaped as a partly cylindrical shell and is rotatable in relation to the shell of the primary casing part about a rotational axis coaxial with the rotational axis of the roller (1).

3. Dust remover according to claim 2, c h a r a c t e r i z e d in that the rotational movement of the secondary casing part (11) is controlled by means of guides (10, 13) provided on each of said end walls (8).

4. Dust remover according to claim 3, c h a r a c t e r i z e d in that said guides are designed in the form of circular grooves (10) provided in each of the surfaces of said end walls facing each other.

5. Dust remover according to claim 3, c h a r a c t e r i z e d in that said guides are designed in the form of circular steering edges (13) disposed on the surfaces of said end walls (8) turning from each other, said secondary casing part (11) extending beyond said steering edges (13) and being folded over at there circular edges (14) to form together with said guiding edges (13) a cooperative guiding arrangement.

6. Dust remover according to any of claims 1 - 5, c h a r a c t e r i z e d in that the longitudinal edges (12) of one of the casing parts (7, 11) are designed as sharpened edges for facilitating the tearing away of an adhesive strip which has been clogged with dust particles etc.

7. Dust remover according to any of claims 1 - 5, c h a r a c t e r i z e d in that the longitudinal edges (12) of both casing parts (7, 11) are designed as sharpened edges for facilitating the tearing away of an adhesive strip which has been clogged with dust particles etc.

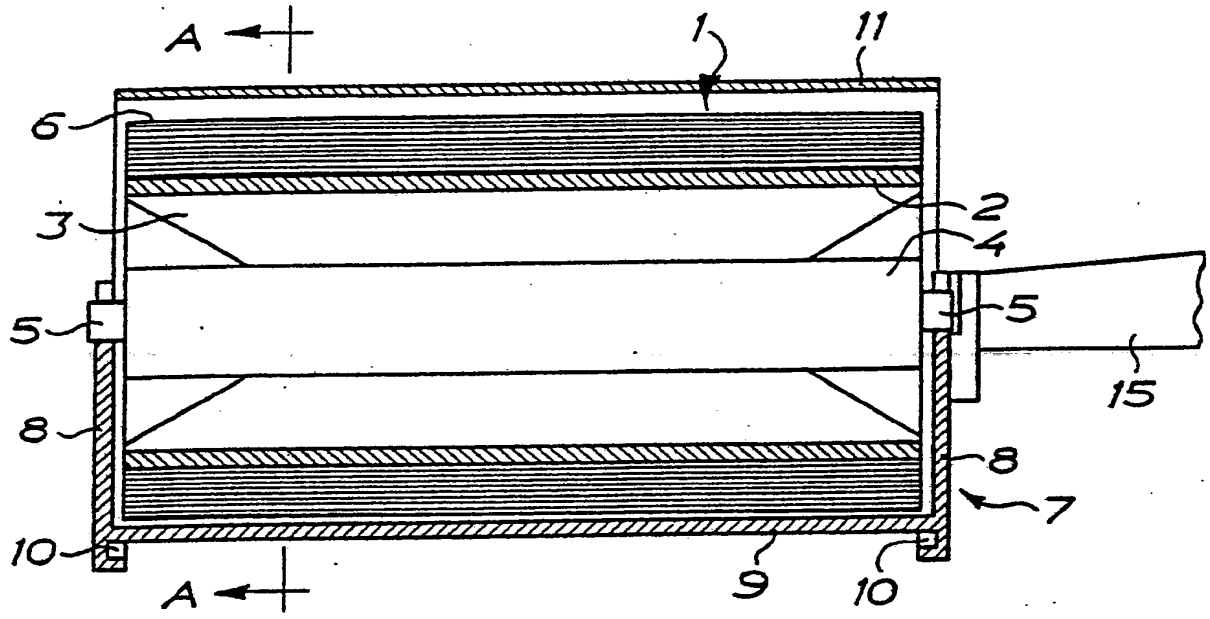

FIG. 1

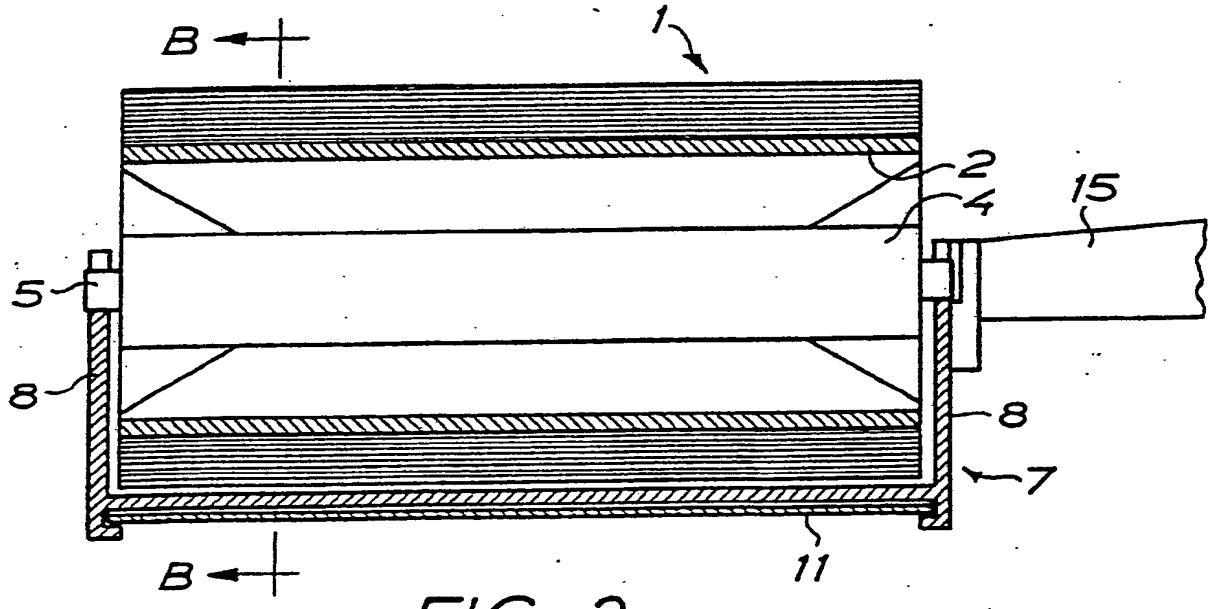

FIG. 2

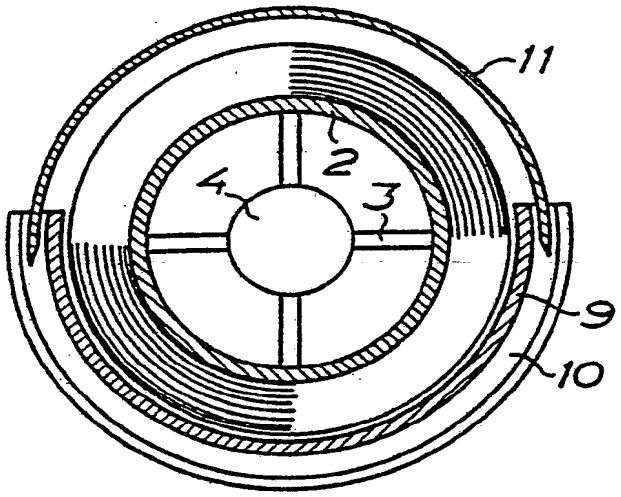

FIG. 3

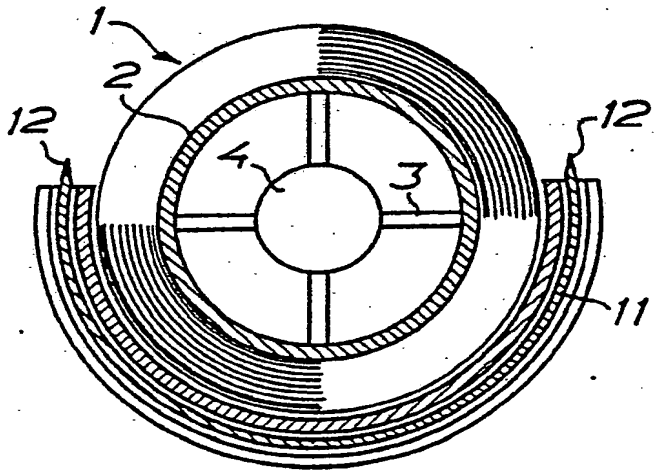

FIG. 4

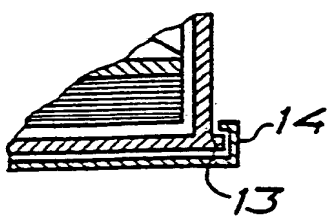

FIG. 5

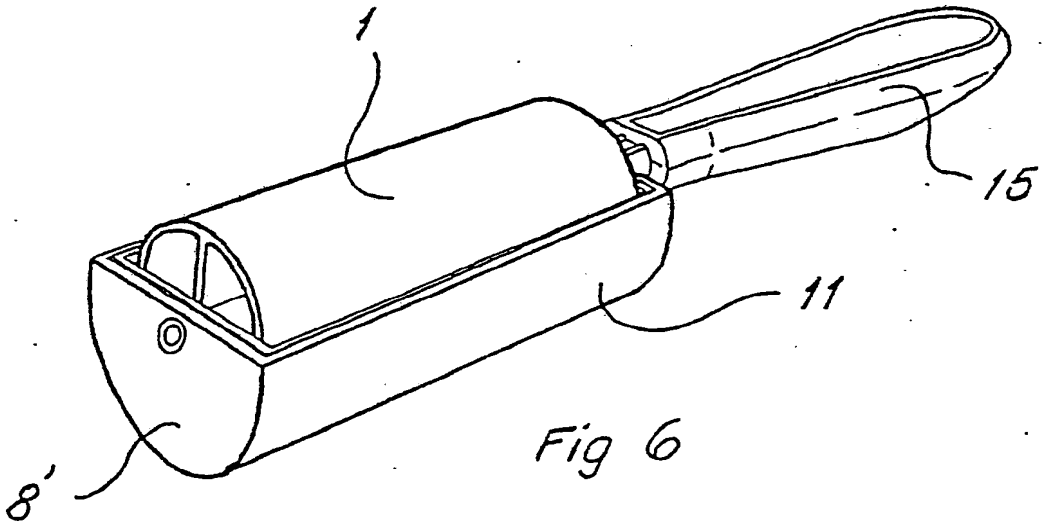

Fig 6

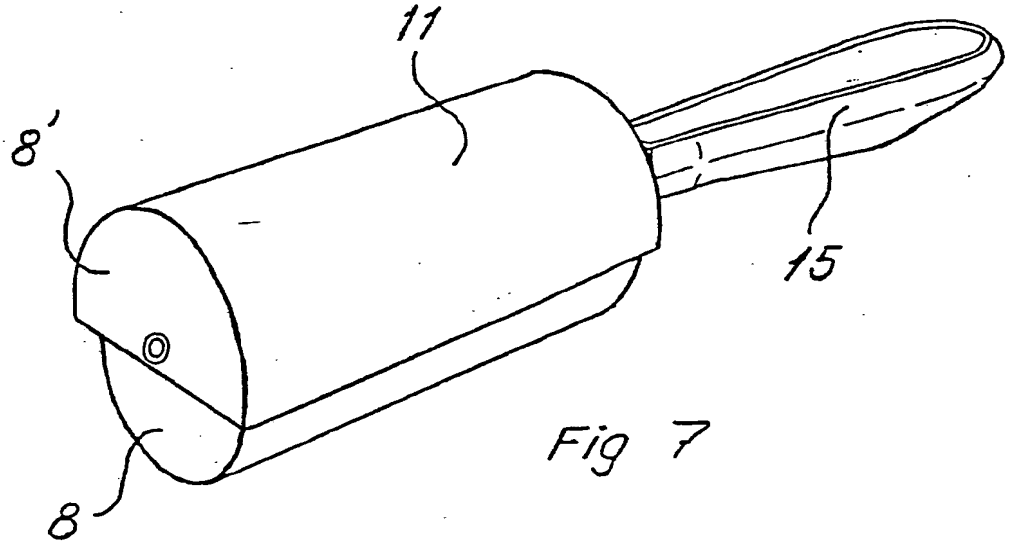

Fig 7

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE82/00379

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC 3

A 47 L 25/00

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC 3	A 47 L 13/00,13/38,13/42,13/48,25/00,25/08 A 46 B 17/04, B 08 B 1/04, B 43 L 17/08, G 11 B 3/58 .../...

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [5]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
A	US, A, 2 542 774 (L K HUTCHINSON) 20 February 1951	1
A	US, A, 3 381 325 (R G REINEMAN) 7 May 1968	1
A	US, A, 3 148 398 (F S THOMAS JR) 15 September 1964	6-7
A	US, A, 1 131 117 (A CLEMENS) 9 March 1915	1-5
A	US, A, 1 326 324 (E CHICHERIO) 30 December 1919	1
A	US, A, 1 590 267 (C C TRESTER) 29 June 1926	1-5

* Special categories of cited documents: [15]

"A" document defining the general state of the art which is not considered to be of particular relevance

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
1983-02-15	1983 -02- 22
International Searching Authority [1]	**Signature of Authorized Officer [10]**
Swedish Patent Office	Folke Svensson Folke Svensson

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

II Fields Searched (cont)

US Cl 15:104, 185, 230.11;
34:95.3;
274:47;
401:208.

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE [10]

This International search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers ...., because they relate to subject matter [12] not required to be searched by this Authority, namely:

2. ☐ Claim numbers ....., because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out [13], specifically:

VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING [11]

This International Searching Authority found multiple inventions in this international application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

☐ The additional search fees were accompanied by applicant's protest.

☐ ... ... accompanied the payment of additional search fees.